

## PHYSIOLOGY

# Transplanted Glands Make Giants in Later Generations

**S**EXUAL precocity and startlingly speeded-up growth is visited upon the great-grandchildren of rats if the four generations involved have implanted into them a succession of thymus glands.

Two years ago Dr. Leonard G. Rowntree of the Philadelphia Institute of Medical Research excited the medical world by announcing his discovery that injections of extract from the thymus gland, then one of the most mysterious parts of the body, in successive rat generations produced rat giants of increasing magnitude. A seventh generation thymus-treated rat seven days old was three times the weight of a normal one eight days old, and it was otherwise old before its time. (*See SNL*, April 7, 1934, May 12, 1934, Oct. 13, 1934, Dec. 15, 1934.)

Now Dr. Rowntree, with an associate, Dr. N. H. Einhorn, has made a similar experiment, using weekly implants of whole thymus glands from other rats, instead of the injections of gland extract. The glands produced an acceleration of growth rate and development, although the effect was not quite so large as when daily injections of extract

were used. The new experiments are reported in *Science* (July 3), and the scientists consider them important confirmation of their previously reported evidence as to the biological effect of thymus extract.

Translated from rats to human terms, thymus treatment means that girls or boys might become sexually mature at the age of 8 or 10 years, if they, their parents, grandparents and great-grandparents had been thymus treated.

The thymus gland is closest to the heart of any endocrine or hormone-producing organ. All animals from primitive fishes up to and including man have thymus glands. Sweetbreads of the dinner table are the thymus glands of calves and it was from them that Dr. Adolph M. Hanson, physician of Fairbault, Minn., obtained the extract used by Dr. Rowntree in his early experiments.

Before the Rowntree experiments, the thymus interested physicians because it sometimes chokes little babies to death. It is a pinkish mass, one ounce in weight, in the upper chest of children, which dwindles to seeming insignificance at sexual maturity.

*Science News Letter*, July 18, 1936

cules of all good fibers—whether natural like cotton and silk, or artificial like rayon—are long and slender; miniature fibers themselves. The molecules of casein are short and lumpy, and simply do not pull together.

*Science News Letter*, July 18, 1936

## ASTRONOMY

## Nova Cephei With Second Outburst Has Speed Record

**W**ITH a new and second outer shell expanding and rushing outward at the record rate of 2,100 miles per second, the "new" star or nova now visible in the sky is unusually interesting to astronomers at the Carnegie Institution's Mt. Wilson Observatory.

A gigantic outburst of gases in the form of a shell is usual with such novae, but two days after its discovery on June 18, Nova Cephei (or Nova Lacertae as it is also called, since it is on the border of the two stellar constellations) developed a second outburst which achieved the largest velocity thus far measured in any nova.

Now dimmer than it was at the peak of its outburst, the star at its best is estimated to have been 100,000 times as luminous as the sun. Its distance from earth is estimated at 2800 light years.

*Science News Letter*, July 18, 1936

## AGRICULTURE

## Winter Wheat Harvest Won Race With Drought

**A** DRAMATIC race for the nation's bread was won in the great central grain belt, as farmers harvested their winter wheat while the drought grew worse day by day.

The devastated wheatfields of the Northwest represent the bulk of the nation's spring-wheat crop. Because it is planted in the same season that it is harvested, it got a late start and had relatively little use of the snow-water left in the soil. Winter wheat, grown predominantly in regions farther south and east, was well covered with snow last winter, used the thaw-water in spring to complete its growth, and came on through to harvest in good shape.

The wheat harvest of the Pacific Northwest—Oregon and Washington—has given no concern, except locally on light soils. Throughout most of this important cereal-growing area, the condition of the crop is reported as "good to excellent."

Small-grain crops other than wheat,

## CHEMISTRY

# Wool From Italian Milk Failure in German Test

**S**YNTHETIC wool made in Italy from casein, the cheese protein, has failed under German laboratory tests for strength and elasticity, reported by Dr. K. Graefe. (*Zeitschrift für angewandte Chemie*).

Single fibers of the widely hailed Italian artificial wool were compared with fibers of natural merino wool. When dry, natural wool fibers could carry a load of 7.5 grams before breaking, while fibers of the "cheese wool" broke under a load of only 3.7 grams. There was an even greater discrepancy in the strength of the two kinds of fibers when wet. Then the natural wool required a load of 5.2 grams to break

it, and the synthetic fibers only 1.7 grams.

"Cheese wool" fibers made an especially poor showing under the stretch test. They could be stretched to only 9.3 per cent more than their original length before they broke, whereas natural wool fibers would stretch 39 per cent when dry, and 55 per cent when wet. They also failed signally under the bending test: a "cheese wool" fiber could be broken by 80 bendings back and forth, whereas a natural wool fiber withstands from 500 to 1000 bendings.

Dr. Graefe thinks that the failure of casein wool may be traced to the shape of its individual molecules. The mole-

being mostly spring-sown, have suffered like the spring wheat. Oats, next in importance to wheat among small grains, is a short crop over practically the entire grain belt.

A note of tragic irony was injected into the drought situation, by losses

sustained by the Arkansas rice crop. This water-needing grain suffered not from drought, but from too much water, that burst the dikes around the fields and ruined many acres.

*Science News Letter, July 18, 1936*

## PHYSIOLOGY

## Certain Cells of Body Not Only Eat But Also Drink

### This Bibulous Type Has Outer Edge Which Flattens To Resemble a Ruffle and Traps Liquid in Its Folds

**M**OVING pictures of life under the microscope show that certain cells of the body drink as well as eat, using a ruffle for their drinking.

This discovery was made by Dr. Warren H. Lewis, of the department of embryology of the Carnegie Institution of Washington and the Johns Hopkins Medical School. For this bibulous type of cell activity he has used the Greek word, pinocytosis, meaning "drinking by cells." Since seeing it in studying moving pictures of cell life Dr. Lewis has been able to observe it directly by watching the cells through the microscope without the aid of the camera.

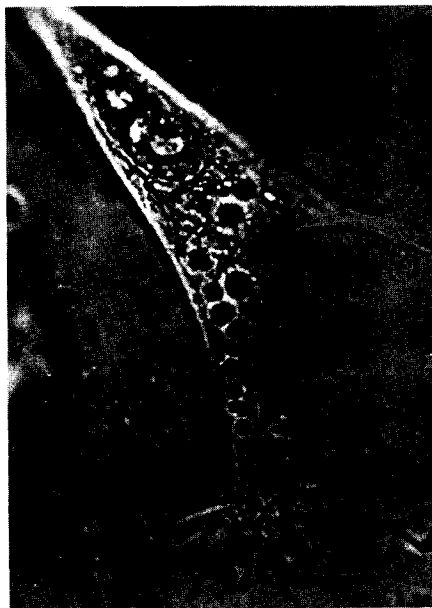
The outer edge of these drinking cells flattens out into a thin membrane which looks like a ruffle. In the films it is seen to be constantly waving about, often projecting out for some distance from the body of the cell. Globules of fluid in the medium in which the cells live can be seen floating into a fold of the ruffled edge of the cell and being surrounded by part of the ruffle. Trapped within its folds, which probably fuse around the globules and completely enclose them, they move rapidly on into the interior of the cell and within from one to five minutes may be seen with other globules that surround the cell nucleus. Once within the cell they are apparently digested by digestive fluids produced by part of the cell.

Some of these cells are pretty heavy drinkers, it appears, for Dr. Lewis reports that under certain conditions they take in a relatively enormous amount of fluid. In the course of an hour the total may amount to one-third of the volume of the cell. As though a human toper were to down six or eight gallons in the same length of time. It is not only the macrophages which are drink-

ing cells. Dr. Lewis has seen cancer cells drinking and also has observed the phenomenon in cells from part of the stomach tissue of rats. It may be that all cells drink.

This cell drinking indicates a new way in which cells can get nourishment and a new mechanism for filtration or purification of body fluids. It also seems to confirm the theory that these macrophage cells are the chief battle sites in the body's war against disease germs.

*Science News Letter, July 18, 1936*



#### IT DRINKS

*This sarcoma cell, highly magnified, is drinking through the semi-circular ruffle at its bottom edge. Note the small, dark globules of fluid that the cell has already drunk, on their way up to the center of the cell where they will be digested.*

## CHEMISTRY-PHARMACY

## Sun Preserves Drug Better Than Chemical

**S**UNLIGHT is a better and more permanent preservative of a commonly used tonic, syrup of ferrous iodide, than the chemicals ordinarily employed to keep the medicine, it appears from the report of Prof. H. V. Arny and his associate, Dr. W. C. Mende of Columbia University to the American Association for the Advancement of Science.

Syrup of ferrous iodide when freshly prepared is "of an attractive green color," but when allowed to stand in a dark place or in diffused light for a few weeks it turns brown. This is due to liberation of free iodine.

"Such darkened syrup of ferrous iodide is dangerously irritating when taken internally and must not be dispensed by the pharmacist in such shape," it was pointed out.

#### Sun Restored Color

"Old time apothecaries found that the brown syrup returned to its original green color by the simple expedient of exposing it for a few hours to direct sunlight."

Since 1876 chemical preservatives have been added to the syrup but with little effect. The best of them kept the syrup green for only six months. Turning back to the notion of the old-time apothecaries, Dr. Arny again tried the effect of sunlight. He found that by keeping the syrup alternately in the sun and in the dark, making about five or six exposures to sunlight, he finally obtained a syrup of ferrous iodide which had a permanent green color.

The sunlight brings about this effect by converting the ordinary cane sugar of the syrup to "invert" sugar, a mixture of dextrose and levulose. When the inversion is completed by sufficiently long exposure to sunlight, the quantity of levulose present is sufficient to preserve the ferrous iodide permanently.

#### Boiling Also Effective

Immersion of the brown syrup in boiling water for an hour is as effective as sunlight in bleaching the color. Their research, Drs. Arny and Mende suggest, indicates the possibility of manufacturing definitely permanent syrup of ferrous iodide. It also shows that physiologists investigating the influence of light on chemicals may do as much in this field for medicine as they have for photography.

*Science News Letter, July 18, 1936*